Reference Manual
00809-0100-3550, Rev AA
March 2019

Rosemount™ 550pH

Single-use pH Sensor for Bioprocessing Applications

ROSEMOUNT™

EMERSON™

Essential instructions

Read this page before proceeding!

Emerson designs, manufactures, and tests its products to meet many national and international standards. Because these instruments are sophisticated technical products, you must properly install, use, and maintain them to ensure they continue to operate within their normal specifications. The following instructions must be adhered to and integrated into your safety program when installing, using, and maintaining Emerson products. Failure to follow the proper instructions may cause any one of the following situations to occur: loss of life, personal injury, property damage, damage to this instrument, and warranty invalidation.

- Read all instructions prior to installing, operating, and servicing the product.
- If this Reference Manual is not the correct one, call 1-800-999-9307 to request the correct Reference Manual. Save this Reference Manual for future reference.
- If you do not understand any of the instructions, contact your Emerson representative for clarification.
- Follow all warnings, cautions, and instructions marked on and supplied with the product.
- Inform and educate your personnel in the proper installation, operation, and maintenance of the product.
- Install equipment as specified in the installation instructions of the appropriate Reference Manual and per applicable local and national codes. Connect all products to the proper electrical and pressure sources.
- To ensure proper performance, use qualified personnel to install, operate, update, program, and maintain the product.
- When replacement parts are required, ensure that qualified people use replacement parts specified by Rosemount. Unauthorized parts and procedures can affect the product's performance, place the safe operation of your process at risk, and may result in fire, electrical hazards, or improper operation.
- Ensure that all equipment doors are closed and protective covers are in place, except when maintenance is being performed by qualified people, to prevent electrical shock and personal injury.

Contents

1 Sensor readiness

1.1 Storage and handling

Store the sensors attached to the single-use bioreactor until needed.

⚠ WARNING

Do not allow sensors to freeze or go below 39 °F (4° C).

Disposal

If the sensors have been contaminated, decontaminate prior to disposal. Please dispose with other electrical and electronic waste per local guidelines. Declarations of Conformity can be found at the end of this manual.

1.2 Specifications

Table 1-1: Rosemount™ 550pH Sensor Specifications

Specifications	Materials and units
Operating temperature range	39 to 104 °F (4 to 40 °C)
Pressure range	0 to 30 Psig (0 to 2 bar)
pH range	2 to 12
Sensor drift	Less than 0.005 pH drift per day in laboratory conditions
Initial one-point standardization accuracy using internal sensor buffer	Less than ±0.1 pH at pH 7
Shelf life	2 years at 77 °F (25 °C), expiration date on sensor label
Measuring method	
Potentiometry	pH glass electrode and double-junction reference electrode
Wetted materials	
Body material	ULTEM™/PEI (USP Class VI)
pH electrode	Proprietary glass formulation
O-ring	EPDM (USP Class VI)
Operations parameters	
Process connection	1-in. barb fitting

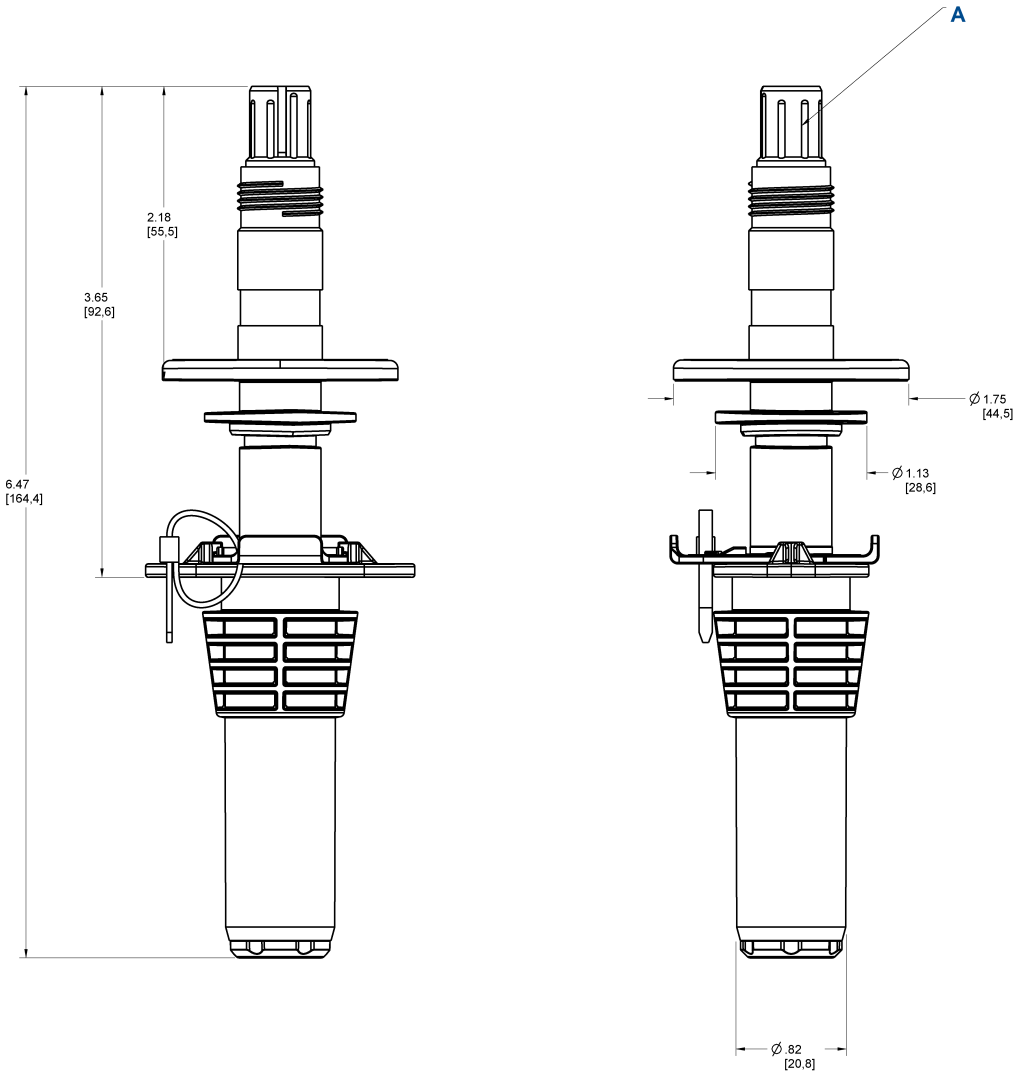
Table 1-1: Rosemount™ 550pH Sensor Specifications *(continued)*

Specifications	Materials and units
Electrical connector	Variopol (VP 8.0)
Sensitivity	Greater than 57 mV / pH at 77 °F (25 °C)
Electrolyte	Phosphate based (see SDS on product website)
Integral temperature sensor	Pt-100
Gamma irradiation	Up to 50 kGy

1.3 Dimensional drawings

See Figure 1-1 for sensor dimensions

Figure 1-1: Rosemount 550pH A1M22E0VP000 Dimensional Drawing



A. VP8 cable connection

2 Install the sensor

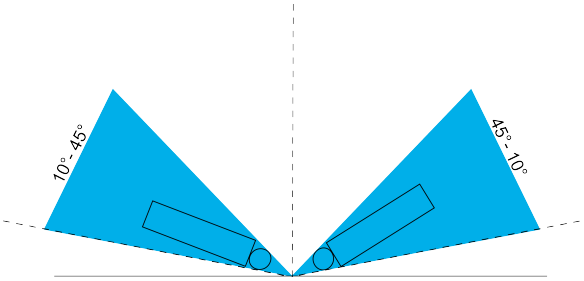
The sensor will be integrated into a 1-in. barb fitting, sealed by several zip tie connectors.

Note
Complete Step 1 through Step 3 before filling the single-use bioreactor with solution.

Procedure

1. Orient the sensor within 10 and 45 ° of horizontal.
   See Figure 2-1.

Figure 2-1: Sensor Orientation

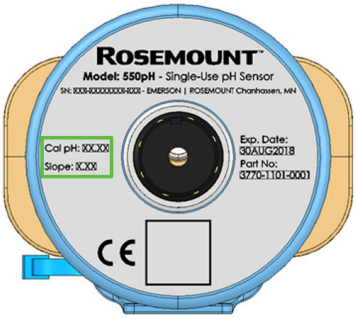


2. Wire the sensor to the transmitter and wait for the reading to stabilize.
   See Wire the sensor for instructions on wiring the sensor to Rosemount™ transmitters.
3. Use the **Calibration** menu on the transmitter to go to Slope/offset setting.
   Recommendation: Do not fill the bag with buffer or other solution until after 3.b to confirm sensor functionality.
   a) Input the factory calibrated slope on the sensor label into the "Slope at 25 C" field and press **ENTER**. Press **EXIT** to go back to the **Calibration** menu.
      Do not touch the value in the "Offset" field. The offset will change and be shown after 3.b.

      Note
      To find the sensor slope and cal pH, scan the two-dimensional barcode on the sensor label.

      See Figure 2-2.

Figure 2-2: Enter Data on Calibrate Screen



b) In the **Calibration** menu, go to the "Standardize (grab)" option. Press **ENTER** at the installation prompt since the reading should already be stabilized. Input the Cal pH on the sensor label into the "pH of grab sample" field to complete the initial sensor standardization.

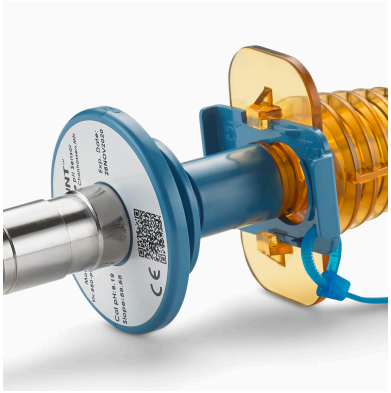
Note
Use pH sensor prior to expiration date.

See Figure 2-2.

4. Clip the zip tie, locking the clip in place. Remove the circular warning tag if it is still present.

   See Figure 2-3.

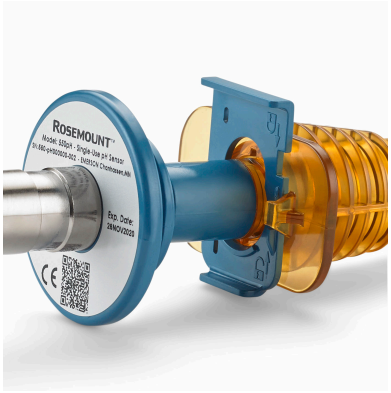
Figure 2-3: Clipped Zip Tie



5. Press the slide lock into the unlocked position.

   The small lip of the lock should be the side that is pressed in. See Figure 2-4.

Figure 2-4: Unlocked Slide Lock



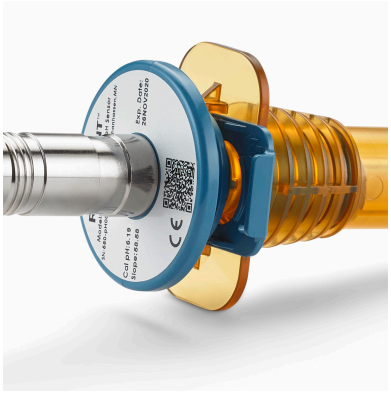
Note
Before continuing to the next step, ensure the sensor is fully submerged in the solution.

6. Use the plunger assembly to push the sensor into the activated position.
   See Figure 2-5.

Figure 2-5: Activated Sensor

7. Press the slide lock into the locked position.
   The small tab on the slide lock should be protruding out. See Figure 2-6.

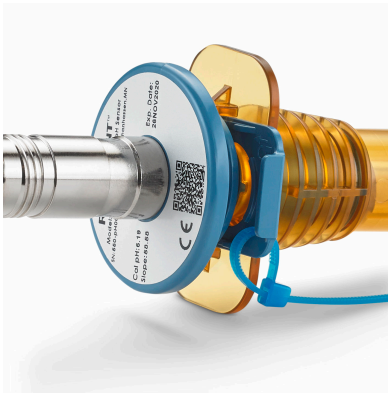
Figure 2-6: Locked Slide Lock



8. Install a zip tie into the slide lock to prevent the sensor from returning to storage position.

   See Figure 2-7.

Figure 2-7: Zip Tie



Postrequisites

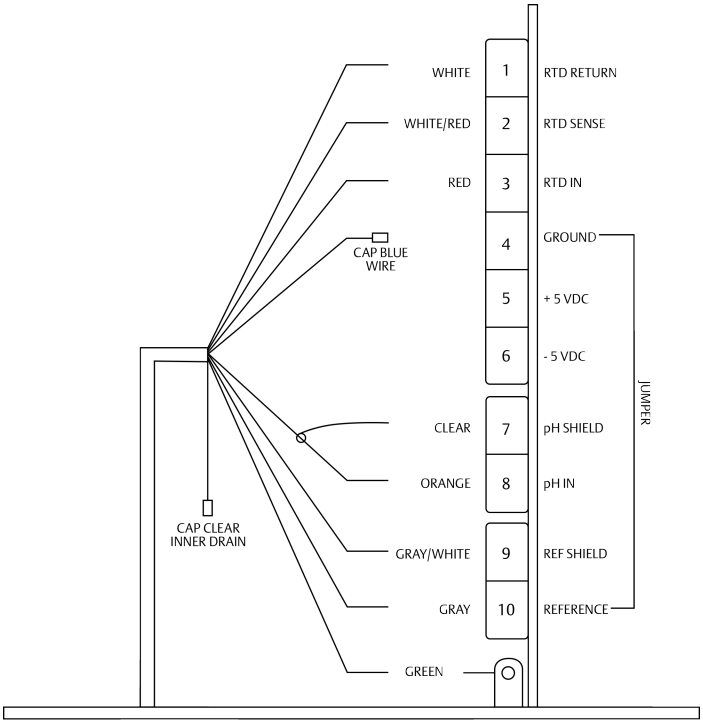
After the start-up is complete, there is no additional work needed on the sensor unless a one-point standardization is deemed necessary. See One-point standardization based on a grab sample for this procedure using an off-line sample.

3 Wire the sensor

Use the following wiring diagrams to wire the Rosemount™ 550pH Sensor to the Rosemount 56, 1056, 1057, 1066, and 5081 Transmitters.

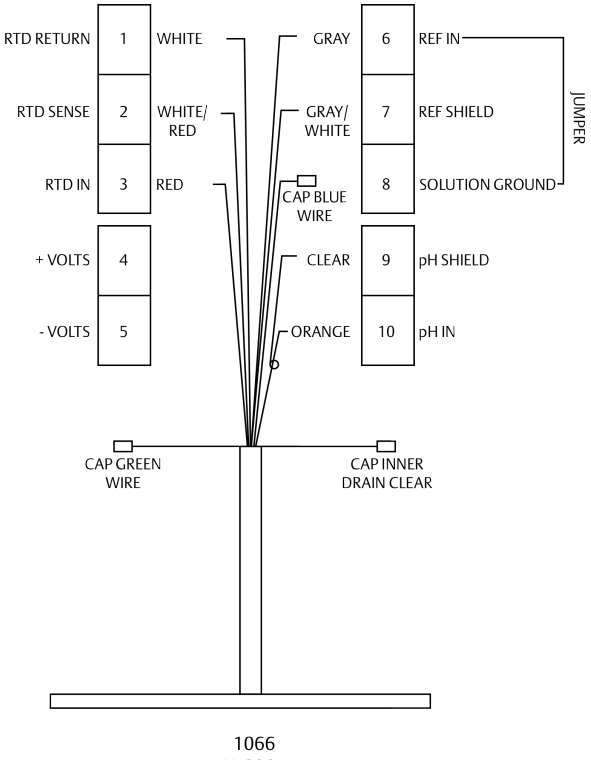
1. See Figure 3-1 to wire the Rosemount 550pH Sensor to the Rosemount 56, 1056, or 1057 Transmitter.

Figure 3-1: Wire the Rosemount 550pH Sensor to the Rosemount 56, 1056, or 1057 Transmitter



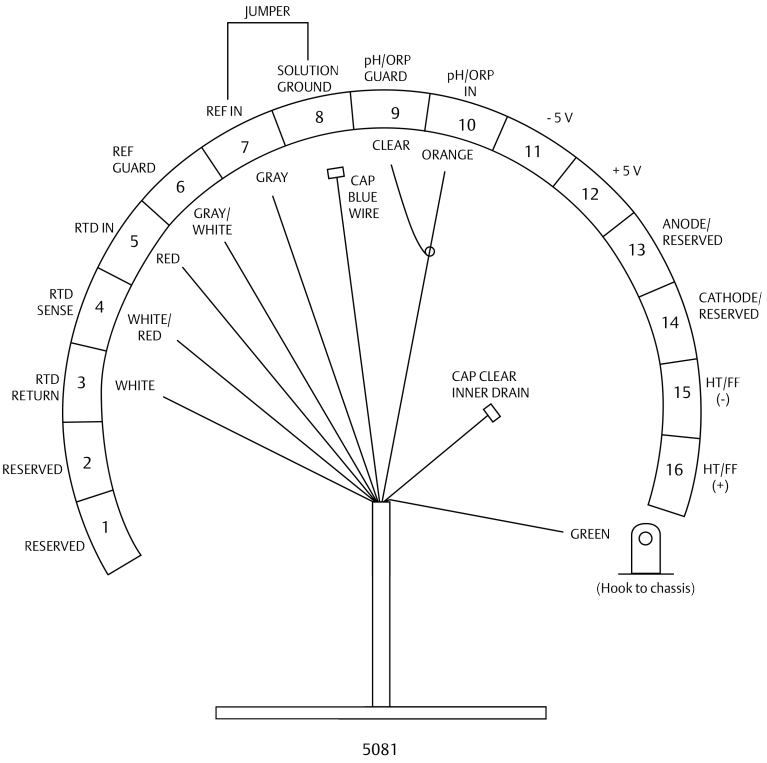
2. See Figure 3-2 to wire the Rosemount 550pH Sensor to the Rosemount 1066 Transmitter.

Figure 3-2: Wire the Rosemount 550pH Sensor to the Rosemount 1066 Transmitter



3. See Figure 3-3 to wire the Rosemount 550pH Sensor to the Rosemount 5081 Transmitter.

Figure 3-3: Wire the Rosemount 550pH Sensor to the Rosemount 5081 Transmitter



4 Calibrate

4.1 One-point standardization based on a grab sample

Complete the following steps to perform a one-point calibration against an off-line sample. This procedure is written for a Rosemount ™ 56 transmitter.

Procedure

1. Press **ENTER** on the transmitter.
2. Select "S1 Measurement" or "S2 Measurement", depending on which sensor you wish to standardize.
3. Select "Standardize (grab)" in the **Calibration** menu.
4. Once the pH reading of the sensor is stabilized, press **ENTER** to pass the installation prompt.
5. Input the pH of the grab sample into the "pH of grab sample" field and press **ENTER**.
6. Press **EXIT** to complete the calibration.

The pH reading on the screen should now equal the pH of the grab sample.

Note
pH is a temperature dependent attribute. Please ensure off-line sample is at the same temperature as the process, so that no errors in standardization occur.

5 Troubleshoot

5.1 Faulty reading

The one-point standardization at startup has a faulty reading.

Recommended actions

1. Rotate sensor within sensor sleeve 90 degrees.
2. Repeat sensor standardization procedure.

5.2 Label information too small

The serial number, Cal pH, or slope are too small to read.

Recommended action

Scan the two-dimensional bar code on the sensor label to retrieve information.

6 China RoHS table

表格 1: 含有 China RoHS 管控物质超过最大浓度限值的部件型号列

Table 1: List of Rosemount 550PH Model Parts with China RoHS Concentration above MCVs

部件名称 Part Name	有害物质 / Hazardous Substances					
	铅 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr +6)	多溴联苯 Polybrominated biphenyls (PBB)	多溴联苯醚 Polybrominated diphenyl ethers (PBDE)
电子组件 Electronics Assembly	O	O	O	O	O	O
传感器组件 Sensor Assembly	X	O	O	O	O	O

本表格系依据 SJ/T11364 的规定而制作。

This table is proposed in accordance with the provision of SJ/T11364

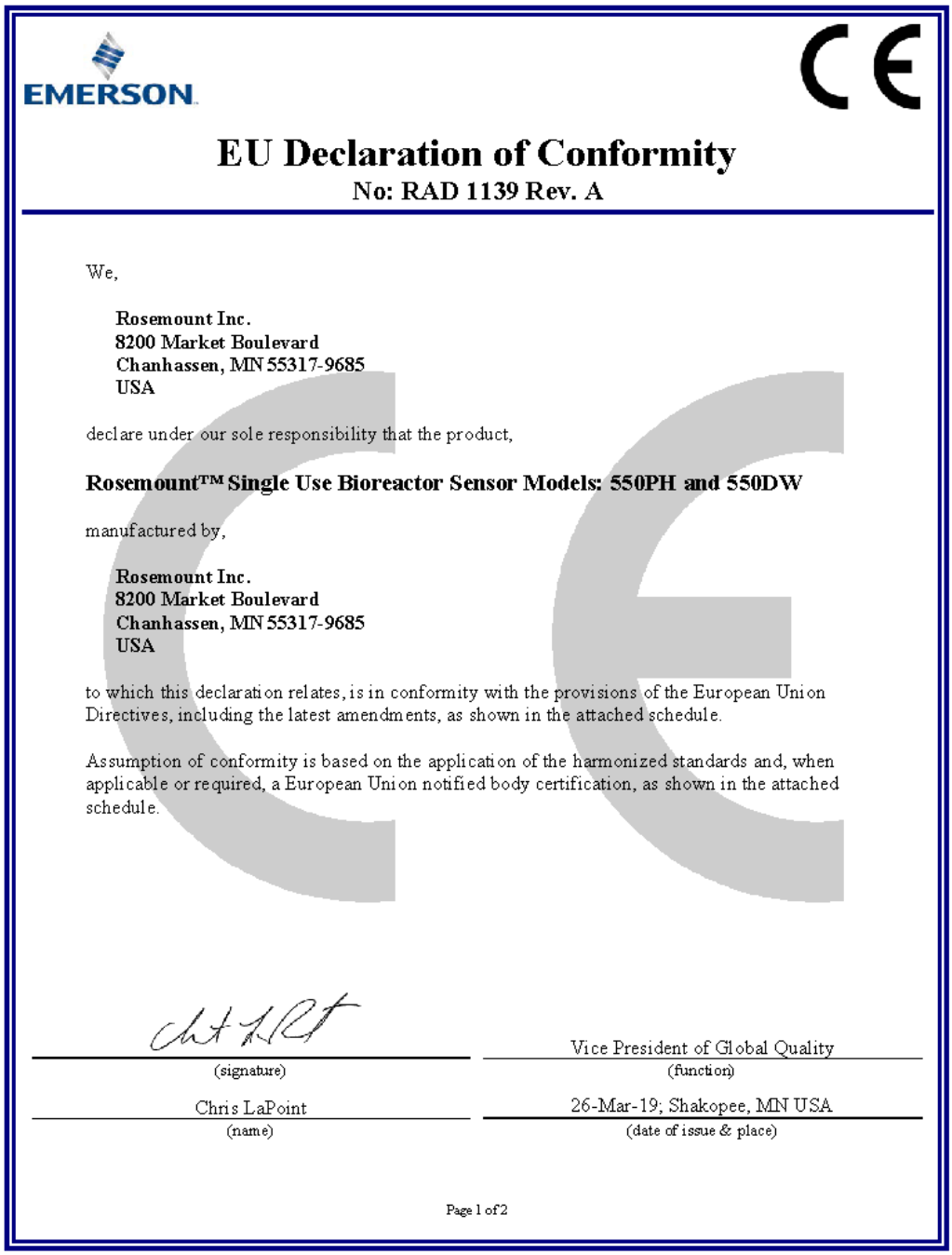
O: 意为该部件的所有均质材料中该有害物质的含量均低于 GB/T 26572 所规定的限量要求。

O: Indicate that said hazardous substance in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

X: 意为在该部件所使用的所有均质材料里，至少有一类均质材料中该有害物质的含量高于 GB/T 26572 所规定的限量要求。

X: Indicate that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.

7 EU Declaration of Conformity



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EU Declaration of Conformity

No: RAD 1139 Rev. A

We,

Rosemount Inc.
8200 Market Boulevard
Chanhassen, MN 55317-9685
USA

declare under our sole responsibility that the product,

Rosemount™ Single Use Bioreactor Sensor Models: 550PH and 550DW

manufactured by,

Rosemount Inc.
8200 Market Boulevard
Chanhassen, MN 55317-9685
USA

to which this declaration relates, is in conformity with the provisions of the European Union Directives, including the latest amendments, as shown in the attached schedule.

Assumption of conformity is based on the application of the harmonized standards and, when applicable or required, a European Union notified body certification, as shown in the attached schedule.

(signature)	Vice President of Global Quality (function)
Chris LaPoint (name)	26-Mar-19; Shakopee, MN USA (date of issue & place)

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EU Declaration of Conformity

No: RAD 1139 Rev. A

The product,

Rosemount™ Single Use Bioreactor Sensors
Model 550PH
Model 550DW

to which this declaration relates, is in conformity with relevant Union harmonization legislation:

RoHS Directive (2011/65/EU)
Harmonized Standard:
EN 50581:2012

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2019

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